

In the Claims:

1. (currently amended) A An automated mechanical device to at least partially separate a portion of an epithelial material layer of a cornea from said the cornea, the device comprising:

a separator having a structure to at least partially separate said portion of said epithelial material from said cornea, ~~where said device can preserve the separated epithelial layer as a disk without rupturing said disk and without substantial epithelial cell loss; and~~

a rotating drum positioned relative to said separator so as to receive said separated portion of said epithelial material from said separator, ~~where the separated epithelial disk is rolled on the drum.~~

2. (currently amended) The device as claimed in claim 1 ~~wherein the device further comprising~~ comprises a ring seating positioned on the eye said cornea, ~~wherein said seating with its plane parallel to a limbus, having has an internal diameter of at least about ranging from about 10 to about 12 mm and external diameter from about 13 to about 16 mm including a groove, where said groove is wider than the internal diameter.~~

3. (currently amended) The device as claimed in claim 1 where said separator is not sharp enough to incise ~~excise~~ corneal tissue while separating said portion of said epithelial material from said cornea during operation.

4. (currently amended) The device as claimed in claim 24 where said separator is not sharp enough to incise ~~excise~~ corneal tissue while separating said portion of said epithelial material from said cornea during operation.

5. (currently amended) The device as claimed in claim 1 further comprising a movement device that controls movement ~~where a travel of said the separator is controlled to produce an epithelial disk hinged to the border of separation.~~

6. (currently amended) The device as claimed in claim 24 further comprising a movement device that controls movement ~~where a travel of said~~

separator along said determined path of travel the separator is controlled to produce an epithelial disk hinged to the border of separation.

7. (canceled).

8. (currently amended) The device as claimed in claim 2 where said seating the ring includes a circumferential groove on the side contacting the eye and a port through which suction is applied to ensure stable mounting of said the seating ring to said cornea.

9. (currently amended) A mechanical device to at least partially separate a portion of an epithelial material of a cornea from said cornea, the device comprising:

a separator having a structure to at least partially separate said portion of said epithelium material from said cornea, The device as claimed in claim 1 wherein the said separator oscillates with a frequency ranging from about 10Hz to about 10KHz; and

a rotating drum positioned relative to said separator so as to receive said separated portion of said epithelial material from said separator and to roll said separated portion of said epithelium material at least partially upon said drum.

10. (currently amended) The device as claimed in claim 9 where said the separator oscillates via oscillation is provided by electromagnetic forces acting on the said separator.

11. (currently amended) The device as claimed in claim 9 where said the separator oscillates via oscillation is provided by piezoelectric forces acting on the said separator.

12. (canceled).

13. (currently amended) The device as claimed in claim 1 further comprising:

a separator support attached to said separator; and

including a member rotating gears that engages said separator support, where a motion of said the separator support is generated in response

~~to provided by the rotating~~ said member moving relative to said separator support ~~gears placed on the support, where rotation to the gears is provided by said oscillating device and said rotating gears~~ member travels ~~are traveling along a track on toothed rails that are parallel to the groove.~~

14. (currently amended) The device as claimed in claim 2, further including a separator support coupled to said separator, wherein ~~where the said separator support freely slides in~~ is movable along a the groove track of said seating.

15. (currently amended) The device as claimed in claim 14, further including a movement ~~an oscillating device coupled to said separator support, where wherein the said separator support slides in~~ movement device moves said separator support along said the groove track when driven by the oscillating device.

16. (canceled).

17. (previously presented) The device as claimed in claim 1 wherein said drum includes a diameter ranging from about 3 to about 9 mm.

18. (currently amended) The device as claimed in claim 1 ~~47~~ where said drum is coated with at least one of a hydrating substrate and a conditioning substrate.

19. (currently amended) The device as claimed in claim 18 where said at least one of said the hydrating substrate and conditioning substrate is selected from the group consisting of a HEMA contact lens ~~lense~~, a tissue culture media, a silicone and a biocompatible ~~hydrogels~~ hydrogel.

20. (currently amended) The device as claimed in claim 18 where said at least one of said hydrating substrate and said conditioning substrate can be removed from said the drum after said portion of said the epithelial material is received by disk attaches on to the said drum.

21. (currently amended) The device as claimed in claim 1 where said drum includes a hollow portion interior.

22. (currently amended) The device as claimed in claim 21 where a surface of said the drum includes a hole ~~holes~~.

23. (currently amended) The device as claimed in claim 22 where said hole communicates ~~holes communicate~~ with said the hollow portion interior of said the drum which is in fluid connection with an ~~to connect to~~ air suction source ~~through the hollow interior of said drum~~.

24. (currently amended) The device as claimed in claim 2, further comprising a separator support that is slidably engaged to a ~~fits in~~ said groove track of said seating to guide ~~carry~~ said the separator on a determined path of travel.

25. (currently amended) The device as claimed in claim 1, further comprising an oscillation device coupled to said separator that provides motion and vibration to said the separator.

26. (currently amended) The device as claimed in claim 1, further comprising a ring seating on said cornea ~~an eye~~, where said seating the ring includes a circumferential groove on the side of the eye and port through which suction is applied to said cornea ~~the circumferential groove~~ to ensure stable mounting of said seating the ring on said cornea.

27. (new) The device as claimed in claim 1, wherein said separator comprises a dull edge that separates said epithelial layer from said cornea.

28. (new) The device as claimed in claim 1, wherein said drum lacks graduations.

29. (new) The device as claimed in claim 1, wherein there is only one separator.

30. (new) The device as claimed in claim 1, wherein said separator comprises an edge that translates along a plane and said drum rotates about an axis that is parallel to said plane.

31. (new) The device as claimed in claim 1, wherein said drum and said separator are connected to one another, and said separator travels across

said cornea as said portion of said epithelial material is separated by said separator.

32. (new) The device as claimed in claim 1, further comprising a seating which rests on said cornea, wherein said seating, said separator and said drum are connected to one another.

33. (new) The device as claimed in claim 32, further comprising a moving device that moves said separator across said seating as said separator separates said portion of said epithelial material from said cornea.

34. (new) The device as claimed in claim 13, wherein said rotating drum rotates by a friction between said member and said track as said separator moves along a second track of said separator support.

35. (new) The device as claimed in claim 13, wherein said member is a rotating member.

36. (new) The device as claimed in claim 13, wherein said separator oscillates during said movement across said seating.

37. (new) The device as claimed in claim 27, wherein said separator moves across said cornea during separation of said portion of said epithelial material and said dull edge is unable to cut said cornea as said separator moves across said cornea during said separation of said portion of said epithelial material.

38. (new) The device as claimed in claim 1, further comprising:
an engagement surface spaced from said drum; and
a moving device that moves said separator and said engagement surface across said cornea, wherein during such movement said engagement surface flattens said portion of said epithelial material prior to said portion of said epithelial material being separated by said separator from said cornea.

39. (new) The device as claimed in claim 38, wherein said separator is unable to substantially incise said cornea as said separator separates said portion of said epithelial material.

40. (new) The device as claimed in claim 13, wherein said member is a gear and said track is a toothed rail that is engaged by said gear when said gear rotates.

41. (new) The device as claimed in claim 1, wherein said separated portion of said epithelial material remains a part of said epithelial material during said separating.

42. (new) The device as claimed in claim 9, wherein said separated portion of said epithelial material remains a part of said epithelial material during said separating.

43. (new) A device that separates at least partially and receives at least partially a portion of an epithelial material of a cornea from said cornea, the device comprising:

a separator having a structure to at least partially separate said portion of said epithelial material from said cornea; and

a moving surface that moves relative to said separator and is positioned so as to receive said separated portion of said epithelial material.

44. (new) The device according to claim 43, wherein said moving surface substantially securely holds said separated portion of said epithelial material.

45. (new) The device according to claim 43, wherein said moving surface has a structure that substantially preserves said separated portion of said epithelial material.

46. (new) The device according to claim 44, wherein said moving surface has a structure that substantially preserves said separated portion of said epithelial material.

47. (new) The device according to claim 46, wherein said moving surface comprises a coating.

48. (new) The device according to claim 47, wherein said coating is a hydrating substance that hydrates said separated portion of said epithelial material.

49. (new) The device according to claim 47, wherein said coating is a conditioning substance that conditions said separated portion of said epithelial material.

50. (new) The device according to claim 47, where said coating is selected from the group consisting of: a HEMA a contact lens, a tissue culture media, a silicone and a biocompatible hydrogel.

51. (new) The device according to claim 44, further comprising a suction source in fluid communication with said moving surface for assisting said moving surface in holding said separated portion of said epithelial material.

52. (new) The device according to claim 51, wherein said moving surface defines at least one aperture through which said suction source applies suction.

53. (new) The device according to claim 43, wherein said moving surface moves in a rotational direction about an axis of rotation.

54. (new) The device according to claim 43, wherein said separator separates a lower surface of said portion of said epithelial material from said cornea and said moving surface is positioned so that said lower surface lies upon said moving surface.

55. (new) The device according to claim 44, wherein said separator separates a lower surface of said portion of said epithelial material from said cornea and said moving surface is positioned so that said lower surface lies upon said moving surface.

56. (new) The device according to claim 43, wherein said separator has a structure such that it is not able to substantially cut corneal tissue during separation of said portion of said epithelial material by said separator.

57. (new) The device according to claim 43, further comprising a seating that engages said separator and defines a path of travel of said separator.

58. (new) The device according to claim 47, wherein said coating is removable.

59. (new) The device as claimed in claim 43, wherein said separated portion of said epithelial material remains a part of said epithelial material.

60. (new) The device as claimed in claim 43, wherein said moving surface moves independently of said separator.

61. (new) A device that separates at least partially and receives at least partially a portion of an epithelial material of a cornea from said cornea, the device comprising:

a separator having a structure that at least partially separates a portion of said epithelial material of said cornea from said cornea; and

a holding device having a structure for holding said portion of said epithelial material in a substantially secure fashion after said portion has been separated from said cornea by said separator.

62. (new) The device as claimed in claim 61, wherein said separated portion of said epithelial material remains a part of said epithelial material.

63. (new) A device that separates at least partially and receives at least partially a portion of an epithelial material of a cornea from said cornea, the device comprising:

a separator having a structure that at least partially separates said portion of said epithelial material of said cornea from said cornea; and

a preserving device that receives said portion of said epithelial material from said separator and preserves said portion of said epithelial material, such that cell loss associated with said portion of said epithelial material received by said preserving device is reduced when compared to the case where said portion of said epithelial material is not received by said preserving device.

64. (new) The device as claimed in claim 63, wherein said separated portion of said epithelial material remains a part of said epithelial material.